

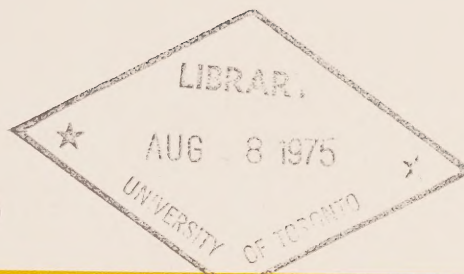
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APPLE PRODUCTION IN ONTARIO



ACKNOWLEDGMENTS

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ECONOMICS INFORMATION

APPLE PRODUCTION IN ONTARIO
Costs and Returns by Regions, 1973

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OBSERVATIONS AND COMMENTS

Apples are the major fruit crop in Ontario, having a farm value of over \$21,000,000 in 1973. The percentage of the crop used for processing has been decreasing and reached an all-time low of 38 percent in 1973. Although the total acreage of apples has remained fairly constant in the last 10 years, there has been a significant change in the preference for trees on size-controlling rootstocks.

Costs were similar in the different apple-producing regions on a per-bearing-acre basis, but net returns varied greatly because of large variations in yields. Results were similar, especially on costs, when the data were analyzed on a per-bushel and per-pound basis.

Preharvest costs were similar in all regions, but preharvest labor costs were less in the Norfolk area because of the dwarfing rootstocks used.

Despite wide variances in yields, harvesting labor hours were similar in all the regions surveyed. When harvesting costs were broken down on a bushel basis, the lowest cost was associated with the highest yield and vice versa.

Marketing costs varied according to market outlets. Growers in eastern Ontario marketed apples from their barns or roadside stands and had higher costs than growers in other regions who relied on cooperatives or local packing houses to perform the marketing function.

Although overhead costs were similar in the different regions, the components of the costs varied considerably.

THE APPLE INDUSTRY IN ONTARIO

Apple production is of great importance to the agricultural economy of Ontario. It is the major fruit crop in the Province and in 1973 had a farm value of over \$21,000,000. While marketed production has declined since 1969, the average production for the 1969-1973 period was higher than the previous five-year period (Table 1).

The percentage of the marketed apple crop used for processing has been decreasing, from 45 percent during the period from 1964 to 1969 to 41 percent during the next five years. The processing percentage reached a low of 38 percent in 1973 (Table 2). This decline is typical of most fruit crops because returns are greater on the fresh market than on the processing market.

The total acreage of apples in Ontario has remained fairly constant during the last 10 years, but there has been a change in the type of trees being planted. Growers are showing a preference for trees on size-controlling rootstocks rather than on seedling roots. From 1961 to 1971, the number of standard apple trees decreased from 831,000 to 726,000, while the number of trees on size-controlling rootstocks increased from 272,000 to over 754,000 (Tables 3 and 4).

Table 1.--Apple Production in Ontario, 1964-1973

	Acres	Marketed production, '000 lb.	From value, \$ '000
1973	27,839	202,931	21,492
1972	27,812	276,170	12,340
1971	27,903	283,944	8,953
1970	27,890	283,650	9,674
1969	27,622	306,576	11,395
1968	27,585	271,489	11,671
1967	27,402	261,035	9,895
1966	26,945	263,303	9,263
1965	27,657	240,424	8,350
1964	27,466	291,060	10,264
Av., 1969-1973	27,813	270,654	12,771
Av., 1964-1968	27,411	265,462	9,889

Source: *Agricultural Statistics for Ontario*, Ontario Ministry of Agriculture and Food, Publication 20, Toronto.

Table 2.--Marketing Apples in Ontario, 1964-1973

	Fresh market, '000 lb.	Processing, '000 lb.	Percent of marketed production	
			Fresh	Processing
1973	126,028	76,903	62	38
1972	155,494	120,676	56	44
1971	167,484	116,460	59	41
1970	170,876	112,774	60	40
1969	178,505	128,071	58	42
1968	161,626	109,863	60	40
1967	128,643	132,392	49	51
1966	147,218	116,085	56	44
1965	134,174	106,250	56	44
1964	155,682	135,378	53	47
Av., 1969-1973	159,677	110,977	59	41
Av., 1964-1968	145,469	119,993	55	45

Source: *Agricultural Statistics for Ontario*, op. cit., and Statistics Canada.

Table 3.--Number and Age of Standard Apple Trees in Ontario

	Age of trees				Total
	1 to 7 yrs.	8 to 15 yrs.	16 to 30 yrs.	31 yrs. & over	
			<u>number</u>		
1971	145,728	112,478	252,020	215,958	726,184
1966	113,386	133,303	327,139	174,964	748,792
1961	124,332	169,694	404,556	132,731	831,314

Source: *1971 Fruit Tree Census, Part III, Apples*, Ontario Ministry of Agriculture and Food, Toronto.

Table 4.--Number and Age of Apple Trees on Size-Controlling Rootstocks in Ontario

	Age of trees				Total
	1 to 5 yrs.	6 to 10 yrs.	11 to 16 yrs.	17 yrs. & over	
			<u>number</u>		
1971	440,147	200,486	100,242	13,385	754,260
1966	247,624	147,029	31,983	a/	426,636
1961	188,364	84,255	b/	b/	272,619

a/ Included in 11 to 16 yrs. column.

b/ Included in 6 to 10 yrs. column.

Source: *Ibid.*

ORGANIZATION OF THE STUDY

At the request of the Ontario Apple Marketing Commission, Economics Branch of the Ontario Ministry of Agriculture and Food undertook a study on the cost of producing apples. The study covered the 1973 growing season and was continued into 1974 to obtain data on marketing and crop returns.

A total of 35 growers participated in the study, with 17 from the Georgian Bay area, 6 from Norfolk County, 4 from the Toronto area, 4 from the Durham-Northumberland area, and 4 from the Dundas-Stormont area. The cooperators were chosen from a list of growers supplied by the Ontario Apple Marketing Commission, and were selected mainly because of their willingness to supply the necessary information. The cooperating farms had 2,719 acres of apples, or approximately 10 percent of the provincial total. The apple enterprise ranged from 17 to 240 acres on these farms and in many cases was the only enterprise on the farm.

Data presented in this report pertain to bearing acreage only. The cost of bringing the apple orchard into production is reflected in the cost of land. The figures in this report do not necessarily represent the average cost of apple production for all growers in Ontario. However, the data do present costs and returns of cooperating growers and can be used by other growers in assessing their own costs and returns.

METHODS USED IN CALCULATING COSTS AND RETURNS

Data were collected for all operations performed on the apple crop, including actual costs and physical quantities of materials and services used. Details were also obtained on the labor supplied by the operator and his family, on the tractor and machines, and on the land used.

Many costs must be allocated among the different crops grown on the farm. All such costs, both operating and fixed, have been allocated proportionately to the apple crop on a per-acre or per-hour basis.

Operating and fixed costs together are called measurable costs. Operating costs are those which are paid in cash and apply to an individual crop (for example, spray, fertilizer, and hired labor costs). Fixed costs are those indirect or noncash costs which have to be paid regardless of the crops or enterprises on the farm (for example, land taxes and depreciation). The methods used to determine physical inputs, costs, and returns are discussed in the following sections.

LABOR. Actual wages paid to hired help were charged against the apple crop. Air fare and housing costs were also included for those growers using West Indian laborers. Although the operator's labor is not considered a cash expense by producers, it was charged at \$3.00 per hour in order to evaluate the profitability of the apple enterprise.

POWER AND MACHINES. An hourly rate was charged for each tractor and main machine (sprayer, pruning aid, cultivator or disc, mower) used on the crop. This rate was based on the annual use, age, and cost of each machine, and included depreciation, interest on investment, repairs, maintenance, housing, insurance, grease, oil, and fuel, where applicable.

All other machinery and equipment, including wagons, pruners, chain saws, ladders, picking harnesses, boxes, bins, and fork lifts, were grouped as miscellaneous machinery. This group was costed at 10 percent for depreciation, 8 percent for interest on investment, and 5 percent for repairs. Any costs for bin rentals were recorded separately.

MATERIALS. The cash costs and quantities of spray, commercial fertilizers, manure, containers, and other materials were recorded.

LAND. All bearing acreage of apples was valued at \$1,500 per acre, with interest on investment calculated at 8 percent. Land taxes were allocated according to the proportion of the farm occupied by the apple orchard. The Ontario Farm Tax Rebate was not considered in this report.

INTEREST ON OPERATING CAPITAL. A charge of 8 percent per annum was made for a 6-month period on operating capital composed of material costs, hired labor, and taxes.

YIELDS AND RETURNS. The growers supplied information on yields harvested and sold and on the returns for these yields. Gross returns also include any payment received under a crop insurance program.

The success of producing apples can be measured by net returns to risk and management, which is the amount remaining after all measurable costs, including an allowance for operator and family labor, interest on investment, and depreciation, have been deducted from gross returns. It is not equivalent to net profit but is an added return, above wages, to the operator for his management and the risks involved in producing the apple crop.

REGIONAL VARIATIONS IN COSTS AND RETURNS

Apples are grown in most areas of southern Ontario because they are adaptable to the climate. As would be expected with the wide range of soils and climate, yields, costs, and returns can vary widely from one area to another. In this study, costs were fairly similar in the different regions, varying from a low of \$723 per bearing acre in the Georgian Bay area to a high of \$782 in the Norfolk area. Due to the variations in yields, however, net returns to risk and management showed a much greater range. Net returns were \$61 per bearing acre in the Dundas-Stormont area, while they were \$711 per acre in the Georgian Bay area. The Dundas-Stormont area's low return reflects its low yield of 147 bushels per acre. The Georgian Bay and Norfolk areas had the highest yields at 305 and 334 bushels per acre, respectively (Table 5).

Similar results, especially on costs, were evident when the data were analyzed on a per-bushel and per-pound basis. Costs per acre were similar in the Dundas-Stormont and Georgian Bay areas, but costs per bushel were \$4.98 and \$2.37 for the respective areas emphasizing the much lower yield in the eastern area (Table 5). The gross return per bushel and per pound in Dundas-Stormont was higher than in the other areas because it included crop insurance payments on apples that were not harvested.

It should be mentioned that 1973 was not a typical year for returns in the apple industry. Because of a short crop in the United States, growers received prices that were much higher than usual for apples sold both on the fresh market and for processing. Prices for the 1974 crop dropped considerably from 1973 levels. The 1973 conditions should be considered when the data in this report are used for any projections or estimates concerning grower returns.

SEASONAL COSTS OF APPLE PRODUCTION BY REGION

Although total production costs were similar in the various regions, several differences appeared in the components of these costs between regions. These differences can be seen in the total production costs given in Table 6, but can be analyzed more clearly when the costs are broken down by season of operation.

Table 5.--Costs and Returns of Apple Production, by Region, Ontario, 1973

	Durham- ^{a/}		Dundas- ^{b/}		
	Georgian Bay	Northumberland	Stormont	Norfolk	Toronto
Number of records	17	4	4	6	4
Bearing acres per record	63.1	66.5	38.4	80.7	48.8
Yield per bearing ac., bu.	305	248	147	334	240
Per bearing acre:					
					dollars
Gross returns	1,434	1,224	793	1,375	1,084
Operating costs	367	448	292	513	345
Gross margin	1,067	776	501	862	739
Fixed costs	356	332	440	269	414
Total costs	723	780	732	782	759
Net returns to risk & mgt.	711	444	61	593	325
Per bushel:					
Gross returns	4.70	4.94	5.40	4.12	4.52
Operating costs	1.20	1.80	1.99	1.54	1.44
Gross margin	3.50	3.14	3.41	2.58	3.08
Fixed costs	1.17	1.34	2.99	.80	1.72
Total costs	2.37	3.14	4.98	2.34	3.16
Net returns to risk & mgt.	2.33	1.80	.42	1.78	1.36
Per pound:					
Gross returns	11.2	11.8	12.8	9.8	10.7
Operating costs	2.8	4.3	4.7	3.7	3.4
Gross margin	8.4	7.5	8.1	6.1	7.3
Fixed costs	2.8	3.2	7.1	1.9	4.1
Total costs	5.6	7.5	11.8	5.6	7.5
Net returns to risk & mgt.	5.6	4.3	1.0	4.2	3.2

^{a/} Gross returns in the Durham-Northumberland area include crop insurance payments of \$13 per acre, \$.06 per bushel, and \$.002 per pound.

^{b/} Gross returns in the Dundas-Stormont area include crop insurance payments of \$59 per acre, \$.40 per bushel, and \$.009 per pound.

Table 6.--Total Production Costs per Bearing Acre of Apples, by Region, Ontario, 1973

	Georgian Bay	Durham Northumberland	Dundas-Stormont	Norfolk	Toronto
Number of records	17	4	4	6	4
Bearing acres per record	63.1	66.5	38.4	80.7	48.8
Yield per bearing acre, bu.	305	248	147	334	240
Labor hours per acre	115.6	139.4	130.5	102.2	107.3
Tractor hours per acre	12.4	10.9	12.0	12.8	12.4
Labor:					
				dollars	
Operating (hired)	190.12	259.29	162.07	165.76	172.07
Fixed (operator)	57.43	66.30	129.80	53.26	57.49
Total	247.55	325.59	291.87	219.02	229.56
Tractor:					
Operating	10.53	5.97	9.01	9.67	10.32
Fixed	15.80	8.98	13.50	14.50	15.48
Total	26.33	14.95	22.51	24.17	25.80
Machinery:					
Operating	6.47	6.24	5.63	6.70	4.18
Fixed	25.89	24.95	22.52	26.82	16.75
Total	32.36	31.19	28.15	33.52	20.93
Storage charges (operating)	28.23	29.66	—	172.04	34.41
Misc. labor charges:					
Operating	29.99	6.20	6.32	30.35	28.60
Fixed	15.55	—	—	15.21	10.73
Total	45.54	6.20	6.32	45.56	39.33
Other (operating):					
Materials	70.35	109.95	76.81	89.39	67.09
Interest on operating capital ...	15.07	12.62	9.59	13.72	12.10
Crop insurance	3.49	8.70	8.13	10.42	3.36
Misc. marketing charges	11.62	8.59	8.39	12.51	11.85
Other overhead	—	—	3.72	.54	—
Bee rental	1.54	.49	1.95	2.03	.88
Total	102.07	140.35	108.59	128.61	95.28
Other (fixed):					
Land charges	129.77	133.12	130.64	129.60	140.02
Building charges	62.89	42.69	77.72	—	73.20
Misc. machinery overhead	48.73	55.84	65.49	29.93	99.87
Total	241.39	231.65	273.85	159.53	313.09
TOTAL PRODUCTION COSTS	723.47	779.59	731.29	782.45	758.40
TOTAL OPERATING COSTS	367.41	447.71	291.62	513.13	344.86
TOTAL FIXED COSTS	356.06	331.88	439.67	269.32	413.54

Table 7.--Preharvest Costs per Bearing Acre of Apples, by Region, Ontario, 1973

	Georgian Bay	Durham-Northerland	Dundas-Stormont	Norfolk	Toronto
Number of records	17	4	4	6	4
Bearing acres per record	63.1	66.5	38.4	80.7	48.8
Yield per bearing acre, bu.	305	248	147	334	240
Preharvest labor hrs. per ac.	26.8	24.5	28.5	18.5	34.9
Preharvest tractor hrs. per ac. ...	5.8	6.1	8.3	4.9	6.6
Labor:					
					dollars
Operating (hired)	39.55	51.53	29.80	21.06	53.38
Fixed (operator)	26.14	14.55	41.85	28.30	30.09
Total	65.69	66.08	71.65	49.36	83.47
Tractor:					
Operating	4.00	3.40	6.15	3.53	5.34
Fixed	6.00	5.11	9.22	5.29	8.01
Total	10.00	8.51	15.37	8.82	13.35
Machinery:					
Operating	4.52	5.99	5.47	5.61	3.74
Fixed	18.08	23.97	21.87	22.44	14.98
Total	22.60	29.96	27.34	28.05	18.72
Materials (operating):					
Manure & mulch	2.27	.54	1.39	1.13	—
Fertilizer	11.24	6.77	6.54	9.39	6.41
Spray	55.32	50.87	58.14	77.48	59.11
Mouse bait	1.52	1.85	.81	1.39	1.57
Total	70.35	60.03	66.88	89.39	67.09
Misc., bee rental (oprtg.)	1.54	.49	1.95	2.03	.88
TOTAL PREHARVEST COSTS	170.18	165.07	183.19	177.65	183.51
OPERATING COSTS	119.96	121.44	110.25	121.62	130.43
FIXED COSTS	50.22	43.63	72.94	56.03	53.08

PREHARVEST COSTS

Preharvest operations undertaken by apple growers include various cultural practices such as pruning, spraying, fertilizing, and mowing grass. The preharvest costs are the same regardless of the final market destination or yield of apples.

Although costs were similar in the various regions, fewer labor hours were used in the Norfolk area, reflecting the greater proportion of dwarf and semidwarf trees that required less time to prune. Also in Norfolk, the cost of spray material was higher than in other regions because the growers sprayed more often (Table 7).

HARVESTING COSTS

Harvesting operations include distributing containers, picking fruit (from trees as well as the ground), and hauling fruit out of the orchard. Harvest labor hours were similar in the different regions despite the wide variance in yields. It seems that whether the yield is large or small, the picker must still position his ladder, go up into the tree, and harvest the fruit—a time-consuming operation.

Harvesting costs varied from a low of \$171 per acre in the Dundas-Stormont area with its yield of 147 bushels to a high of \$240 in the Georgian Bay Area with its yield of 305 bushels (Table 8). When these costs were broken down on a bushel basis, the lowest cost was associated with the highest yield and vice versa.

Another interesting fact is evident under miscellaneous labor charges. Study growers from the Durham-Northumberland and Dundas-Stormont areas used local labor whereas growers in the other areas used West Indian labor (as seen by the air fare and housing charges in Table 8). This fact reflects the supply of labor available and willing to work on the apple crop in the different regions.

MARKETING COSTS

Marketing costs vary according to the type of market outlet. The study growers in the Durham-Northumberland and Dundas-Stormont areas in eastern Ontario marketed their apples from barns or roadside stands. Their marketing costs were much higher than for growers in the other three areas who marketed their apples through cooperatives or local packing houses. The high labor cost in eastern Ontario reflects the time spent packing apples and attending to roadside markets (Table 9). The higher cost of hampers and bags in the Durham-Northumberland area was also caused by three of the four study growers selling their produce through their own roadside stands.

Table 8.--Harvesting Costs per Bearing Acre of Apples, by Region, Ontario, 1973

	Georgian Bay	Durham-Northumberland	Dundas-Stormont	Norfolk	Toronto
Number of records	17	4	4	6	4
Bearing acres per record	63.1	66.5	38.4	80.7	48.8
Yield per bearing ac., bu.	305	248	147	334	240
Harvest labor hrs. per ac.	86.8	77.0	75.9	81.5	69.9
Harvest tractor hrs. per ac.	5.8	4.7	3.7	7.9	4.9
Labor:					
				dollars	
Operating (hired)	148.79	152.83	101.20	140.98	118.05
Fixed (operator)	27.38	21.54	56.56	21.60	20.86
Total	176.17	174.37	157.76	162.58	138.91
Tractor:					
Operating	5.16	2.54	2.86	6.14	4.12
Fixed	7.74	3.82	4.28	9.21	6.18
Total	12.90	6.36	7.14	15.35	10.30
Machinery:					
Operating	1.08	.18	—	.05	—
Fixed	4.33	.70	—	.20	—
Total	5.41	.88	—	.25	—
Miscellaneous labor charges:					
Housing:					
Fixed	15.55	—	—	15.21	10.73
Operating .....	.62	—	—	.60	.49
Air fare (operating)	21.46	—	—	20.03	13.01
W.C., C.P.P., etc. ^{a/} (oprting) ...	7.91	6.20	6.32	9.72	15.10
Total	45.54	6.20	6.32	45.56	39.33
TOTAL HARVESTING COSTS	240.02	187.81	171.22	223.74	188.54
OPERATING COSTS	185.02	161.75	110.38	177.52	150.77
FIXED COSTS	55.00	26.06	60.84	46.22	37.77

^{a/} Workmen's compensation, Canada Pension Plan, insurance, etc.

Table 9.--Marketing Costs per Bearing Acre of Apples, by Region, Ontario, 1973

	Georgian Bay	Durham-Northerland	Dundas-Stormont	Norfolk	Toronto
Number of records	17	4	4	6	4
Bearing acres per record	63.1	66.5	38.4	80.7	48.8
Yield per bearing ac., bu.	305	248	147	334	240
Marketing labor hrs. per ac.	2.0	37.9	26.1	2.2	2.5
Marketing tractor hrs. per ac. ....	.8	.1	—	—	.9
Labor:					
					dollars
Operating (hired)	1.78	54.93	31.07	3.72	.64
Fixed (operator)	3.91	30.21	31.39	3.36	6.54
Total	5.69	85.14	62.46	7.08	7.18
Tractor:					
Operating	1.37	.03	—	—	.86
Fixed	2.06	.05	—	—	1.29
Total	3.43	.08	—	—	2.15
Machinery:					
Operating .....	.87	.07	.16	1.04	.44
Fixed	3.48	.28	.65	4.18	1.77
Total	4.35	.35	.81	5.22	2.21
Other (operating):					
Ont. Apple Mkt. Comm. fees	9.01	7.84	5.62	9.31	6.32
Selling commissions	1.68	—	—	.68	—
Custom trucking .....	.93	—	—	2.52	5.53
Hampers, bags, etc.	—	49.92	9.93	—	—
Other (advertising, etc.)	—	.75	2.77	—	—
Total	11.62	58.51	18.32	12.51	11.85
TOTAL MARKETING COSTS	25.09	144.08	81.59	24.81	23.39
OPERATING COSTS	15.64	113.54	49.55	17.27	13.79
FIXED COSTS	9.45	30.54	32.04	7.54	9.60

OVERHEAD COSTS

Overhead costs include items that relate to the whole apple operation and are difficult to segregate into a particular seasonal operation (Table 10). Land charges are similar in the different areas since the value of the bearing orchard was set at \$1,500 per acre for all growers.

Storage charges include the cost of hydro for the growers' own storage and/or the cost of renting storage space. Study growers in the

Dundas-Stormont area sold nearly all their produce directly from the field in 1973, so there is no storage charge. All the growers in the Norfolk area rented storage space, with a resulting high storage charge. Furthermore, Norfolk growers did not incur any building charges because they did not operate storage or packing sheds.

The large cost for miscellaneous machinery in the Toronto area resulted from the growers owning a large number of bins compared with growers in other areas. This cost was low for Norfolk growers because they rented bins.

Table 10.--Miscellaneous Overhead Costs per Bearing Acre of Apples, by Region, Ontario, 1973

	Georgian Bay	Durham Northumberland	Dundas-Stormont	Norfolk	Toronto
Number of records	17	4	4	6	4
Bearing acres per record	63.1	66.5	38.4	80.7	48.8
Land charges (fixed):					
Interest on investment	120.00	120.00	120.00	120.00	120.00
Taxes	9.77	13.12	10.64	9.60	20.02
Total	129.77	133.12	130.64	129.60	140.02
Building charges (fixed):					
Interest on investment	26.48	18.11	32.21	—	29.74
Depreciation	16.55	11.32	20.13	—	18.59
Insurance	3.31	1.94	5.25	—	6.28
Repairs	16.55	11.32	20.13	—	18.59
Total	62.89	42.69	77.72	—	73.20
Other (operating):					
Storage charges	28.23	29.66	—	172.04	34.41
Int. on oprtg. capital	15.07	12.62	9.59	13.72	12.10
Crop insurance	3.49	8.70	8.13	10.42	3.36
Other	—	—	3.72	.54	—
Total	46.79	50.98	21.44	196.72	49.87
Other (fixed):					
Misc. machinery overhead	48.73	55.84	65.49	29.93	99.87
Total	48.73	55.84	65.49	29.93	99.87
TOTAL OVERHEAD COSTS	288.18	282.63	295.29	356.25	362.96
OPERATING COSTS	46.79	50.98	21.44	196.72	49.87
FIXED COSTS	241.39	231.65	273.85	159.53	313.09

